UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

HA

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/866,067	05/23/01	MEADE T	A-69626-2DIVA

HM12/0814

ROBIN M. SILVA
FLEHR HOHBACH TEST ALBRITTON & HERBERT L
SUITE 3400
FOUR EMBARCADERO CENTER
SAN FRANCISCO CA 94111-4187

EXAMINER	
ZITOMER, S	

ART UNIT	PAPER NUMBER
1654	4

DATE MAILED: 08/14/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/866,067	MEADE et al.
Examiner	**Art Unit**
Stephanie Zitomer	1655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jul 9, 2001* .

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *21-32* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *21-32* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

DETAILED ACTION

Continuing application information

1. An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification (37 CFR 1.78). The transmittal papers filed with the application state that it is a continuation of application serial no. 08/946,679 whereas Office records show the present application to be a continuation of 09/454,498 which is a continuation of 08/946,679 which in turn has two listed ancestral applications. The latter include 08/166,036 which appears in the oath/declaration. Clarification and correction are required.

Rejections under 35 U.S.C. 101: Lack of utility

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 21-32 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific asserted utility or a well established utility. The specification fails to teach the claimed "nucleotide comprising a covalently attached electron transfer moiety" and thus fails to disclose an asserted specific and substantial utility for the claimed nucleotide. On the contrary, according to the specification the nucleotide with attached electron transfer moiety occurs only as an integral component of a nucleic acid molecule, for example, as set forth in the paragraph bridging pages 10-11. The specification teaches attachment of the electron transfer moiety to an amino-modified nucleotide after the modified nucleotide has been incorporated into the nucleic acid molecule during synthesis (e.g., in the paragraph bridging pages 12-13) which teaches away from a "nucleotide comprising a covalently attached electron transfer moiety" as a discreet molecule as claimed. Furthermore, one of skill in the art would not have expected that a nucleotide with attached electron transfer moiety which comprises a necessarily liganded transition metal would be readily incorporated during either an enzymatic synthesis or a chemical synthesis due to the bulky structure of such electron transfer groups which would interfere with the necessary contact between the reactants. For example, Bannwarth et al. (5,278,043) discloses nucleic acids in which electron transfer compounds are attached to the terminal

nucleotides or are substituted for some of the internal nucleotides. Notably, the reference does not teach the incorporation of nucleotides with liganded electron transfer moieties attached thereto during nucleic acid synthesis. Therefore, the claimed nucleotides also do not have an established utility. Note that because the claimed invention is not supported by a specific asserted utility for the reasons set forth above credibility cannot be assessed.

Rejection under 35 U.S.C. 112, first paragraph: Lack of enablement

3. Claims 21-32 also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Rejection under 35 U.S.C. 112, first paragraph: Lack of written description

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 21-32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Although Figures 4A and 4B illustrate a nucleoside comprising a liganded electron transfer group in order to demonstrate the attachment to an amino modification on the ribose, the specification fails to describe the claimed "nucleotide comprising a covalently attached electron transfer moiety" as a molecule that is distinct from a nucleic acid molecule. In the method of making nucleic acids comprising electron transfer moieties described in the specification at page 20 and in Example 1 at pages 36-42, the nucleotides are modified by addition of an amino group at the 2' or 3' position and the liganded electron transfer moiety is attached via the amino group after synthesis of the nucleic acid in which the amino-modified nucleosides are incorporated (page 20, lines 15-24). Thus, the specification further fails to teach how to make the claimed invention nucleotide with attached electron transfer moiety. Furthermore, one of skill in the art would not have expected that a nucleotide with attached electron

transfer moiety which comprises a liganded transition metal as taught in the specification would be readily incorporated during either an enzymatic synthesis or a chemical synthesis due to the bulky structure of such electron transfer groups which would interfere with the necessary contact between nucleotides. For example, Bannwarth et al. (5,278,043) discloses nucleic acids in which electron transfer compounds are attached to the terminal nucleotides or are substituted for some of the internal nucleotides. Nucleosides with bulky electron transfer moieties attached are not incorporated during nucleic acid synthesis. The specification simply does not describe a nucleotide with an electron transfer group attached thereto as a discrete molecule as claimed. Nor does the specification teach the claim 27 method of "making a nucleic acid comprising a covalently attached electron transfer moiety" by incorporating a nucleotide triphosphate with covalently attached electron transfer moiety into a nucleic acid "in a synthetic reaction". In addition to enablement the first paragraph of 112 requires a "written description". As set forth by the Court in *Vas-Cath Inc. v. Mahurkar*, 19 USPQ2d 1111, the written description must convey to one of skill in the art "with reasonable clarity" that as of the filing date applicant was in possession of the claimed invention. It is clear from the lack of description in the specification that applicant did not contemplate the claimed nucleotide comprising a covalently attached electron transfer moiety and the method of incorporating it during nucleic acid synthesis at the time the claimed invention application was filed.

Rejection under 35 U.S.C. 112, second paragraph: Indefiniteness

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 21-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are confusing because the function of the modification in the "modified nucleotide" and its relationship to the electron transfer moiety are not recited.

Provisional double patenting: Obviousness type

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified

or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 12-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 12-25 of copending application no. 09/306,749 and over claims 21-28 of copending application no. 09/602,618. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a nucleoside comprising a covalently attached electron transfer moiety. The claim sets differ essentially in that in the '749 and '618 claims the nucleotide is a phosphoramidite nucleoside. However, it would have been obvious to one of ordinary skill in the art to provide the nucleotide in its naturally triphosphorylated state for the known benefit of saving time, labor and cost by omitting the phosphoramidite linkage. The method of making a nucleic acid comprising the claimed nucleotide as in present claims 27-32 would have been obvious over the nucleosides of the '749 and '618 claims because one of ordinary skill in the art would have known that the triphosphate form of the nucleotide was required in nucleic acid synthesis reactions.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

7. **No claim is allowed.**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephanie Zitomer whose telephone number is (703) 308-3985. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones, can be reached on (703) 308-1152. The official fax phone number for this Group is (703) 308-4242. The unofficial fax number is (703) 308-8724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

S. Zitomer

Stephanie Zitomer, Ph.D.

August 13, 2001

STEPHANIE W. ZITOMER
PRIMARY EXAMINER